JCB
THE JOURNAL OF CELL BIOLOGY
VOL. 176, NO. 1, JANUARY 1, 2007

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- Syt-12 for spontaneous release

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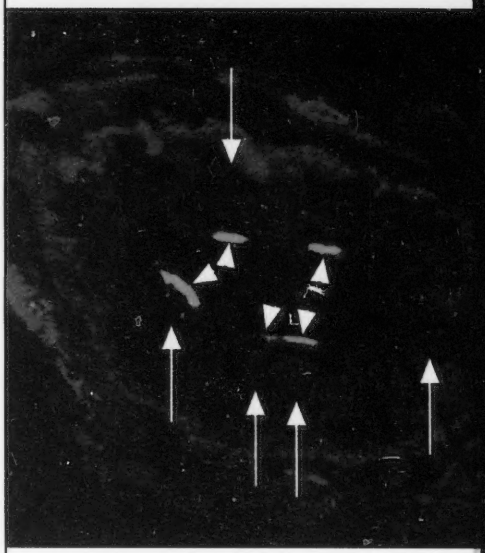

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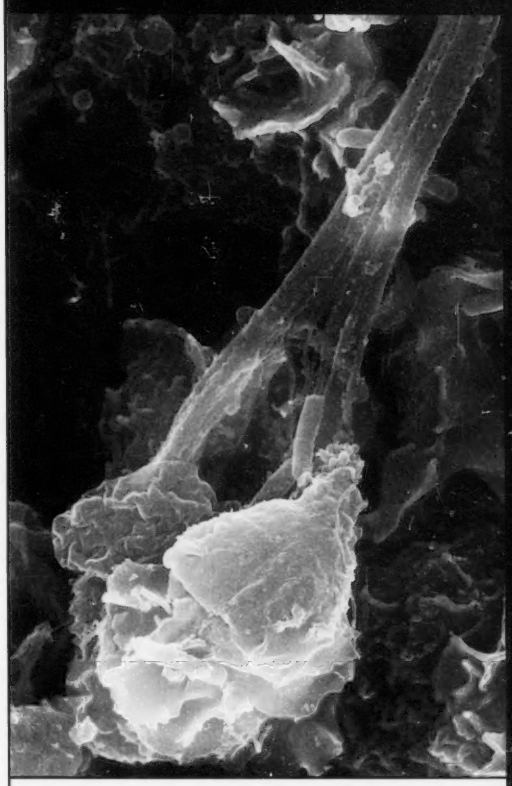

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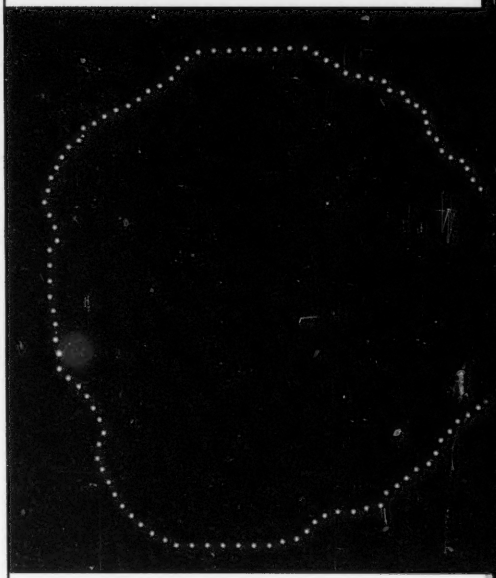

During development, a *Trypanosoma* locus (green) rapidly relocalizes to the nuclear periphery.
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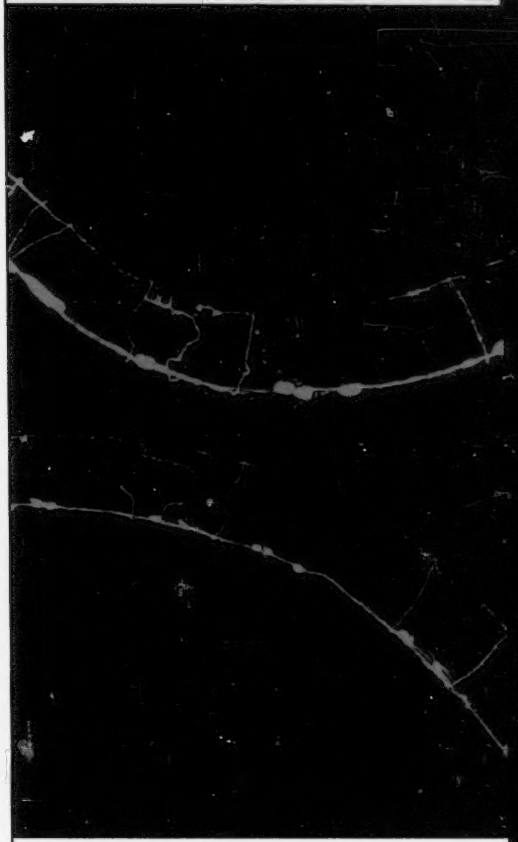

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The onset of activity (bottom) causes worm axons that lack β-spectrin to break (leftmost of four central axons) and then degenerate (rightmost of four central axons) or resprout.
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355 Fibrillin-1 regulates the bioavailability of TGFβ1
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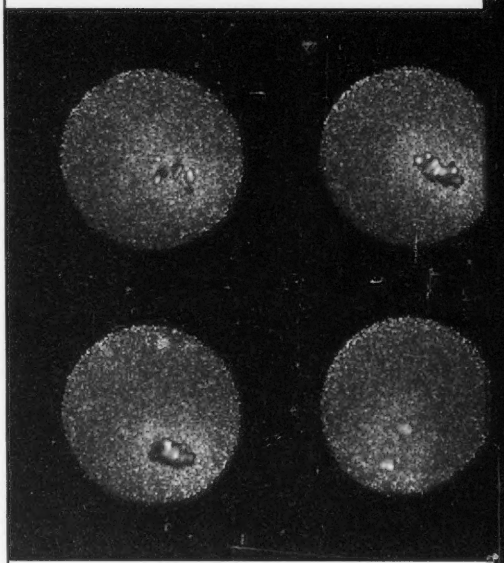

A Ran gradient may help vertebrate meiosis II spindles to assemble rapidly.
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445 DSL ligand endocytosis physically dissociates Notch1 heterodimers before activating proteolysis can occur
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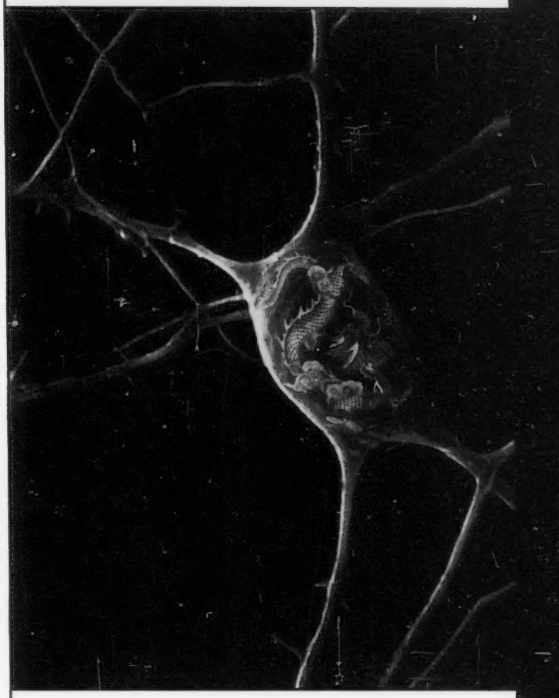

On the cover

Thirty years after the Cultural Revolution, China is getting its act together in bioscience research.
Image of neuron © David McCarthy/ Science Photo Library; cover concept and design by Mark Yeo.
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459 Activation of endosomal dynein motors by stepwise assembly of Rab7–RILP–p150^{Glued}, ORP1L, and the receptor βIII spectrin
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535 Hyaluronan and CD44 antagonize mitogen-dependent cyclin D1 expression in mesenchymal cells
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545 Two distinct modes of myosin assembly and dynamics during epithelial wound closure
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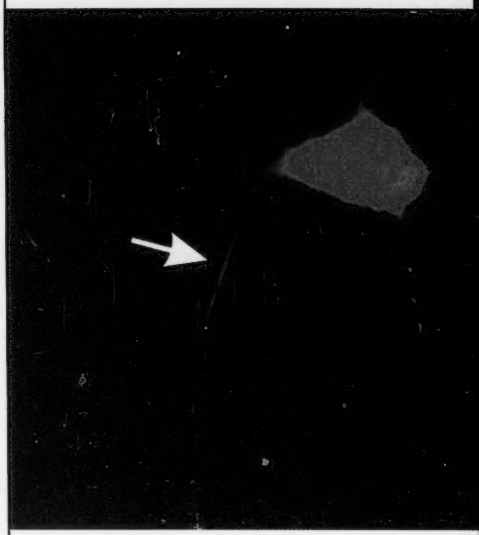

Clustering of endogenous ankyrinG or Na^+ channel (red) at the axonal initial segment is not altered by a mutant ankyrinG (green) that disrupts βIV spectrin localization.
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593 Defects in lamin B1 expression or processing affect interphase chromosome position and gene expression
Ashraf Malhas, Chiu Fan Lee, Rebecca Sanders, Nigel J. Saunders, and David J. Vaux

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Dynactin still drives cargo (green) along microtubules (red) even without its microtubule binding domain.
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605 Translation attenuation by PERK balances ER glycoprotein synthesis with lipid-linked oligosaccharide flux
Jie Shang, Ningguo Gao, Randal J. Kaufman, David Ron, Heather P. Harding, and Mark A. Lehrman

617 Membrane chaperone Shr3 assists in folding amino acid permeases preventing precocious ERAD
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629 Rer1p competes with APH-1 for binding to nicastrin and regulates γ-secretase complex assembly in the early secretory pathway
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641 Microtubule binding by dynactin is required for microtubule organization but not cargo transport
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653 Functional analysis of an individual IFT protein: IFT46 is required for transport of outer dynein arms into flagella
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667 Focal adhesion kinase modulates tension signaling to control actin and focal adhesion dynamics
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681 PPARγ1 attenuates cytosol to membrane translocation of PKCα to desensitize monocytes/macrophages
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695 Notch signaling is necessary for epithelial growth arrest by TGF-β
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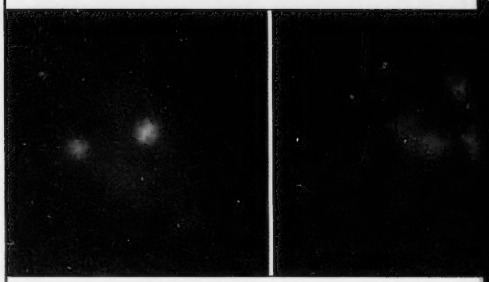
709 Critical role of the extracellular signal–regulated kinase–MAPK pathway in osteoblast differentiation and skeletal development
Chunxi Ge, Guozhi Xiao, Di Jiang, and Renny T. Franceschi

719 Matrix-specific p21-activated kinase activation regulates vascular permeability in atherogenesis
A. Wayne Orr, Rebecca Stockton, Michael B. Simmers, John M. Sanders, Ian J. Sarembock, Brett R. Blackman, and Martin Alexander Schwartz



Chromosome 18 (red) loses its attachment to the nuclear periphery in the absence of lamin B (right).
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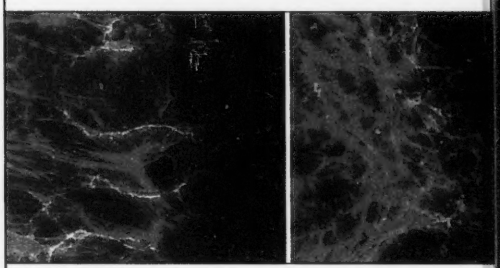

Actin filaments (red) and focal adhesions (green) are perturbed in the absence of focal adhesion kinase (right).
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- How CENP-A reaches the centromere
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- Muscle first in neurodegenerative disease?
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735 Centromeric chromatin gets loaded
Christopher W. Carroll and Aaron F. Straight

737 To die or not to die—a role for Fork head
Carl S. Thummel

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741 SYCE2 is required for synaptonemal complex assembly, double strand break repair, and homologous recombination
Ewelina Bolcun-Filas, Yael Costa, Robert Speed, Mary Taggart, Ricardo Benavente, Dirk G De Rooij, and Howard J Cooke

749 Chromosome breakage after G2 checkpoint release
Dorothee Deckbar, Julie Birraux, Andrea Krempler, Leopoldine Tchouandong, Andrea Beucher, Sarah Walker, Tom Stiff, Penny Jeggo, and Markus Löbrich

757 Functional genomics identifies a Myb domain–containing protein family required for assembly of CENP-A chromatin
Paul S. Maddox, Francie Hyndman, Joost Monen, Karen Oegema and Arshad Desai

765 *Xenopus tropicalis* egg extracts provide insight into scaling of the mitotic spindle
Katherine S. Brown, Michael D. Blower, Thomas J. Maresca, Timothy C. Grammer, Richard M. Harland, and Rebecca Heald

771 Exo70p mediates the secretion of specific exocytic vesicles at early stages of the cell cycle for polarized cell growth
Bing He, Fengong Xi, Jian Zhang, Daniel TerBush, Xiaoyu Zhang, and Wei Guo

779 Requirement of ZO-1 for the formation of belt-like adherens junctions during epithelial cell polarization
Junichi Ikenouchi, Kazuaki Umeda, Sachiko Tsukita, Mikio Furuse, and Shoichiro Tsukita

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Fly myofibrils (shown) are abnormal in the absence of SMN, which associates with α-actinin (red) to form thin filaments. Mutations in human SMN cause spinal muscular atrophy.
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787 Absence of integrin-mediated TGFβ1 activation in vivo recapitulates the phenotype of TGFβ1-null mice
Zhiwei Yang, Zhenyu Mu, Branka Dabovic, Vladimir Jurukovski, Dawen Yu, Joanne Sung, Xiaozhong Xiong, and John S. Munger

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795 Propagation of centromeric chromatin requires exit from mitosis
Lars E.T. Jansen, Ben E. Black, Daniel R. Foltz, and Don W. Cleveland

807 Critical requirement for cell cycle inhibitors in sustaining nonproliferative states
Deborah Pajalunga, Alessia Mazzola, Anna Maria Salzano, Maria Grazia Biferi, Gabriele De Luca, and Marco Crescenzi

819 A CDK-related kinase regulates the length and assembly of flagella in *Chlamydomonas*
Lai-Wa Tam, Nedra F. Wilson, and Paul A. Lefebvre

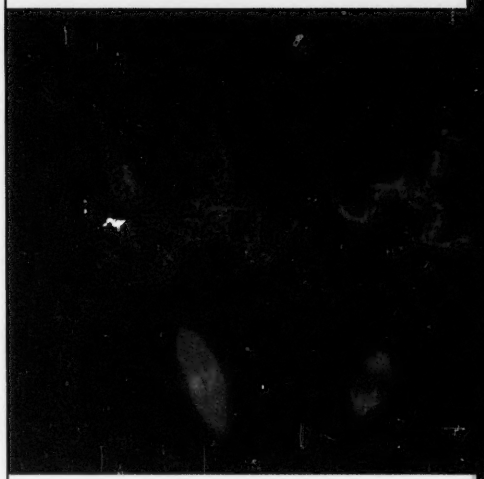
831 A *Drosophila melanogaster* model of spinal muscular atrophy reveals a function for SMN in striated muscle
T.K. Rajendra, Graydon B. Gonsalvez, Michael P. Walker, Karl B. Shpargel, Helen K. Salz, and A. Gregory Matera

843 Fork head controls the timing and tissue selectivity of steroid-induced developmental cell death
Chike Cao, Yanling Liu, and Michael Lehmann

853 Identification of prothymosin-α1, the necrosis–apoptosis switch molecule in cortical neuronal cultures
Hiroshi Ueda, Ryousuke Fujita, Akira Yoshida, Hayato Matsunaga, and Mutsumi Ueda

863 The Par polarity complex regulates Rap1- and chemokine-induced T cell polarization
Audrey Gérard, Alexander E.E. Mertens, Rob A. van der Kammen, and John G. Collard

877 Syk, c-Src, the αvβ3 integrin, and ITAM immunoreceptors, in concert, regulate osteoclastic bone resorption
Wei Zou, Hideki Kitaura, Jennifer Reeve, Fanxin Long, Victor L.J. Tybulewicz, Sanford J. Shattil, Mark H. Ginsberg, F. Patrick Ross, and Steven L. Teitelbaum



Spindles (bottom) are ~30% longer in *Xenopus laevis* (green) than in its smaller, faster-breeding relative, *X. tropicalis* (red). **See page 765.**

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- Bending membrane to form filopodia
- Fibulin-5 for youthful skin
- Macrophages boost hair growth
- Spastin pulls tubulin out of shape

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- Destroying the messenger
- Migrating toward adhesion
- Big mammals have big (or slow) cells

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Reports

895 Inhibition of caveolar uptake, SV40 infection, and β1-integrin signaling by a nonnatural glycosphingolipid stereoisomer
Raman Deep Singh, Eileen L. Holicky, Zhi-jie Cheng, Seong-Youl Kim, Christine L. Wheatley, David L. Marks, Robert Bittman, and Richard E. Pagano

903 ASK1-dependent recruitment and activation of macrophages induce hair growth in skin wounds
Nao Osaka, Takumi Takahashi, Shiori Murakami, Atsushi Matsuzawa, Takuya Noguchi, Takeshi Fujiwara, Hiroyuki Aburatani, Keiji Moriyama, Kohsuke Takeda, and Hidenori Ichijo

Articles

911 The Aurora kinase Ipl1 maintains the centromeric localization of PP2A to protect cohesin during meiosis
Hong-Guo Yu and Douglas Koshland

919 Bub1 is essential for assembly of the functional inner centromere
Yekaterina Boyarchuk, Adrian Salic, Mary Dasso, and Alexei Arnaoutov

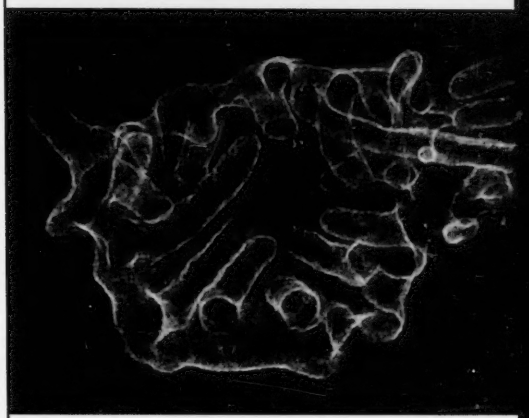
929 The RNA-binding protein Sam68 modulates the alternative splicing of Bcl-x
Maria Paola Paronetto, Tilman Achsel, Autumn Massiello, Charles E. Chalfant, and Claudio Sette

941 Jagunal is required for reorganizing the endoplasmic reticulum during *Drosophila* oogenesis
Sangil Lee and Lynn Cooley

953 Missing-in-metastasis and IRSp53 deform PI(4,5)P_2-rich membranes by an inverse BAR domain–like mechanism
Pieta K. Mattila, Anette Pykäläinen, Juha Saarikangas, Ville O. Paavilainen, Helena Vihinen, Eija Jokitalo, and Pekka Lappalainen

965 Plectin 1f scaffolding at the sarcolemma of dystrophic (*mdx*) muscle fibers through multiple interactions with β-dystroglycan
Günther A. Rezniczek, Patryk Konieczny, Branislav Nikolic, Siegfried Reipert, Doris Schneller, Christina Abrahamsberg, Kay E. Davies, Steve J. Winder, and Gerhard Wiche

Articles with related stories in the IN THIS ISSUE section have page numbers in RED.



On the cover

IM domains deform vesicle membranes (pictured); similar activity at the plasma membrane drives filopodia formation.
See page 953.

979 Linker molecules between laminins and dystroglycan ameliorate laminin-α2–deficient muscular dystrophy at all disease stages
Sarina Meinen, Patrizia Barzaghi, Shuo Lin, Hanns Lochmüller, and Markus A. Ruegg

995 Recognition of C-terminal amino acids in tubulin by pore loops in Spastin is important for microtubule severing
Susan Roehl White, Katia J. Evans, Jeffrey Lary, James L. Cole, and Brett Lauring

1007 The actin-based motor protein myosin II regulates MHC class II trafficking and BCR-driven antigen presentation
Fulvia Vascotto, Danielle Lankar, Gabrielle Faure-André, Pablo Vargas, Jheimmy Diaz, Delphine Le Roux, Maria-Isabel Yuseff, Jean-Baptiste Sibarita, Marianne Boes, Graça Raposo, Evelyne Mougneau, Nicolas Glaichenhaus, Christian Bonnerot, Bénédicte Manoury, and Ana-Maria Lennon-Duménil

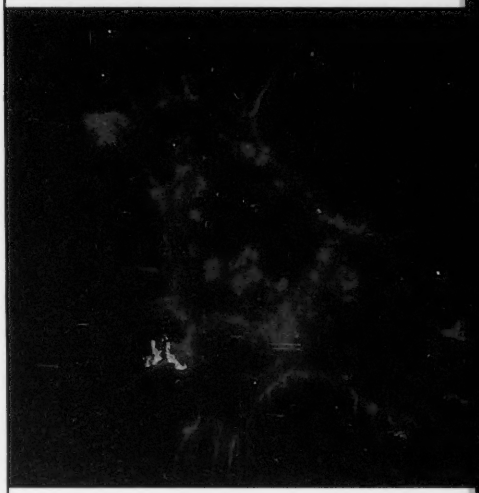
1021 Rap1 controls cell adhesion and cell motility through the regulation of myosin II
Taeck J. Jeon, Dai-Jen Lee, Sylvain Merlot, Gerald Weeks, and Richard A. Firtel

1035 Essential role of PDK1 in regulating endothelial cell migration
Luca Primo, Laura di Blasio, Cristina Roca, Sara Droetto, Roberto Piva, Brian Schaffhausen, and Federico Bussolino

1049 Essential role of protein kinase C ζ in transducing a motility signal induced by superoxide and a chemotactic peptide, fMLP
Kageaki Kuribayashi, Kiminori Nakamura, Maki Tanaka, Tsutomu Sato, Junji Kato, Katsunori Sasaki, Rishu Takimoto, Katsuhisa Kogawa, Takeshi Terui, Tetsuji Takayama, Takayuki Onuma, Takuya Matsunaga, and Yoshiro Niitsu

1061 Fibulin-5/DANCE has an elastogenic organizer activity that is abrogated by proteolytic cleavage in vivo
Maretoshi Hirai, Tetsuya Ohbayashi, Masahito Horiguchi, Katsuya Okawa, Akari Hagiwara, Kenneth R. Chien, Toru Kita, and Tomoyuki Nakamura

1073 Correction



Cells use PKCζ to convert migratory cues into active actin (red) organization and movement.
See page 1049.